

Title (en)  
SEMICONDUCTOR DEVICE

Title (de)  
HALBLEITERBAUELEMENT

Title (fr)  
DISPOSITIF SEMI-CONDUCTEUR

Publication  
**EP 2698823 A1 20140219 (EN)**

Application  
**EP 12770971 A 20120413**

Priority  
• JP 2011091332 A 20110415  
• JP 2012002597 W 20120413

Abstract (en)  
A semiconductor device includes a substrate, a channel layer that is formed above the substrate, where the channel layer is made of a first nitride series compound semiconductor, a barrier layer that is formed on the channel layer, a first electrode that is formed on the barrier layer, and a second electrode that is formed above the channel layer. Here, the barrier layer includes a block layers and a quantum level layer. The block layer is formed on the channel layer and made of a second nitride series compound semiconductor having a larger band gap energy than the first nitride series compound semiconductor, and the quantum level layer is made of a third nitride series compound semiconductor having a smaller band gap energy than the second nitride series compound semiconductor, and has a quantum level formed therein.

IPC 8 full level  
**H01L 29/872** (2006.01); **H01L 21/02** (2006.01); **H01L 21/205** (2006.01); **H01L 21/338** (2006.01); **H01L 29/06** (2006.01); **H01L 29/15** (2006.01); **H01L 29/47** (2006.01); **H01L 29/778** (2006.01); **H01L 29/812** (2006.01)

CPC (source: EP KR US)  
**H01L 21/0237** (2013.01 - EP US); **H01L 21/02381** (2013.01 - EP US); **H01L 21/02458** (2013.01 - EP US); **H01L 21/02507** (2013.01 - EP US); **H01L 21/0254** (2013.01 - EP US); **H01L 21/0262** (2013.01 - EP US); **H01L 21/18** (2013.01 - KR); **H01L 29/1029** (2013.01 - EP US); **H01L 29/155** (2013.01 - EP US); **H01L 29/778** (2013.01 - KR); **H01L 29/7783** (2013.01 - EP US); **H01L 29/7787** (2013.01 - EP US); **H01L 29/812** (2013.01 - EP US); **H01L 29/872** (2013.01 - EP KR US); **H01L 29/2003** (2013.01 - EP US)

Designated contracting state (EPC)  
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DOCDB simple family (publication)  
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**US 201313952640 A 20130728**; CN 201280007853 A 20120413; EP 12770971 A 20120413; JP 2011091332 A 20110415; JP 2012002597 W 20120413; KR 20137018278 A 20120413